

2003 SUPPLEMENT**Fruit Production Recommendations****Publication 360S**

The Ontario Ministry of Agriculture and Food Web site address has changed to www.gov.on.ca/omaf to reflect the recent ministry name change. This supplement contains new product registrations for 2002–2003. For complete information, please refer to the full edition of Publication 360, *Fruit Production Recommendations*, 2002–2003. For changes to weed control recommendations, refer to the 2003 supplement to Publication 75, *Guide to Weed Control, 2002*. This 36-page supplement can be downloaded at www.gov.on.ca/OMAF/english/products/newpubs.html. It is also available from OMAF resource centers.

This supplement contains information on:

New Products

Cabrio EG
Assail 70 WP
Sluggo

New Uses

Funginex 190 EC
Agri-Mek 1.9% EC
Kelthane 50W
Elevate 50 WDG
Polyram DF
Sovran
Topas 250E

Additions for 2003

Chapter	Crop	Product	Diseases and Insects	Timing	Rate	Comments
Chapter 7	Apples, non-bearing	Funginex 190 EC	Powdery mildew	Tight Cluster (pg. 76) Summer Sprays (pg. 76)	2.5 L/ha	May be applied to non-bearing apples at 2-week intervals after petal fall if necessary.
	Apples	Assail 70 WP	Rosy apple aphid	Half-inch Green (pg. 69) Full Pink (pg. 71) Petal Fall (pg. 72) First Summer Spray (pg. 73) Special Sprays (pg. 74)	120 g/ha	Alternate Assail 70 WP with insecticides from different chemical families. See Table 4-1, <i>Insecticides Used On Fruit Crops, By Family</i> . Maximum 4 applications/yr. The preharvest interval is 7 days. The re-entry period is 12 hours.
			Tentiform leafminer	Tight Cluster to Pink (pg. 70) Petal Fall (pg. 72) Special Summer Sprays (pg. 75)	80 g/ha	
			Green apple aphid	Special Summer Sprays (pg. 74)	120 g/ha	
			Codling moth	Subsequent Summer Sprays (pg. 74)	170 g/ha	
			Potato leafhopper	Special Summer Sprays (pg. 74)	120 g/ha	
			White apple leafhopper	Special Summer Sprays (pg. 74)	120 g/ha	
			Phomopsis cane blight and anthracnose fruit rot	Green Tip, Pink Bud, Petal Fall (pg. 104)	1.0 kg/ha	Make no more than 2 consecutive applications, then alternate with fungicides from different families. See Table 4-2, <i>Fungicides Used on Fruit Crops, by Family</i> . The re-entry interval is 29 days. The preharvest interval is 29 days.
	Blueberries	Cabrio EG				Begin at 10% bloom and, if the weather is wet, repeat every 7-10 days until the end of bloom. Rotate with fungicides from different families. See Table 4-2, <i>Fungicides Used on Fruit Crops, by Family</i> . The re-entry interval is 4 hours. The preharvest interval is 1 day. For post-harvest use only. Re-entry interval is 24 hours.
	Raspberries and blackberries	Elevate 50 WDG	Fruit rots (Botrytis grey mould)	Bloom (pg. 112)	1.7 kg/ha	
		Agri-Mek 1.9% EC	Two-spotted spider mite	Postharvest (pg. 113)	1.1 L/ha	
Chapter 8		Kelthane 50W	Two-spotted spider mite	Special Sprays (pg. 113)	2.0 kg/ha	Apply when mite populations are beginning to build and mostly in the nymph stage. Apply a maximum of one application per year. Alternate with other miticides See Table 4-3, <i>Miticides Used on Fruit Crops, by Family</i> . The preharvest interval is 7 days.

Chapter	Crop	Product	Diseases and Insects	Timing	Rate	Comments
Chapter 8	Strawberries	Cabrio EG	Anthracnose fruit rot	First Bloom (pg. 121) 7–10 Days after First Bloom (pg. 121) Preharvest (pg. 122)	1.0 kg/ha	Make no more than 2 consecutive applications, then alternate with fungicides from different families. See Table 4–2, <i>Fungicides Used on Fruit Crops, by Family</i>. Bloom is the best time to control this disease. Warm wet weather during bloom favours the development of anthracnose. Re-entry interval is 1 day. The preharvest interval is 1 day.
Chapter 9	Grapes	Sluggo	Slugs and snails	Preharvest (pg. 122)	25 kg/ha	Apply higher rate of 50 kg/ha if population is very high. Apply when infestation begins. Reapply as the bait is consumed, or at least every 2 weeks if slugs and snails continue to be a problem.
		Assail 70 WP	Leafhoppers	End of Flowering to Early Fruit Set Stage (pg. 136)	80 g/ha	Rotate Assail 70 WP with insecticides from different chemical families. See Table 4–1, <i>Insecticides Used on Fruit Crops, by Family</i>. The preharvest interval is 7 days. Re-entry interval is 12 hours. Maximum 2 applications/yr.
		Sluggo	Slugs and snails	Preharvest (pg. 136)	25 kg/ha	Apply higher rate of 50 kg/ha if population is very high. Apply when infestation begins. Reapply as the bait is consumed, or at least every 2 weeks if slugs and snails continue to be a problem.
		Polyram DF	Black rot	Shoot Length 20–25 cm (pg. 135)	3.4 kg/ha	
		Sovran	Powdery mildew	3–5 Leaves Unfolded, 10–15 cm Shoot Length (pg. 134)	300 g/ha	Spray back-to-back sprays of Sovran at 14-day intervals. Spray at 7–10 day intervals if alternating Sovran with another fungicide Apply no more than 2 consecutive sprays. Do not apply more than 4 sprays of Sovran per season. The preharvest interval is 14 days. Re-entry interval is 7 days. See label. Sovran is phytotoxic to some varieties of cherries (see label). Don't let product drift onto sensitive crops.
			Black rot	3–5 Leaves Unfolded, 10–15 cm Shoot Length (pg. 134)	240 g/ha	
			Downy mildew, Powdery mildew	Shoot Length 20–25 cm (pg. 135)	300 g/ha	
			Black rot	Shoot Length 20–25 cm (pg. 135)	240 g/ha	
			Downy mildew, Powdery mildew	Inflorescence Fully Developed (pg. 135)	300 g/ha	
			Black rot	Inflorescence Fully Developed (pg. 135)	240 g/ha	
			Downy mildew, Powdery mildew	End of Flowering to Early Fruit Set (pg. 136)	300 g/ha	
			Black rot	End of Flowering to Early Fruit Set (pg. 136)	240 g/ha	

Chapter	Crop	Product	Diseases and Insects	Timing	Rate	Comments
Chapter 9 (cont'd)	Grapes (cont'd)	Polyram DF	Downy mildew Black rot	Shoot Length 20-25 cm (pg. 135) Inflorescence Fully Developed (pg. 135)	Change rate to: 3.4 kg/ha	
				End Of Late Flowering To Early Fruit Set (pg. 136)	Change rate to: 4.4 kg/ha	
				Berries Pea Sized (pg. 137)	Change rate to: 5.6 kg/ha	
Chapter 10	Sour cherries	Topas 250E	Leaf spot	Petal Fall (pg. 161) Shuck (pg. 161) 1", 2" 3" Cover (pg. 162)	500 mL/ha	Alternate with fungicides from different chemical families. See Table 4-2, <i>Fungicides Used on Fruit Crops, by Family</i> . Re-entry interval is 3 days. See label. The preharvest interval is 3 days.
	Sour cherries	Cabrio EG	Powdery mildew	Second Cover (pg. 162) Postharvest (pg. 162)	0.67 kg/ha	Make no more than 2 consecutive applications, then alternate with fungicides from different families. See Table 4-2, <i>Fungicides Used on Fruit Crops, by Family</i> . Will also suppress brown rot. The preharvest interval is 10 days.
	Sweet cherries	Cabrio EG	Powdery mildew	Second Cover (pg. 162)	0.67 kg/ha	The re-entry interval is 10 days. Powdery mildew is not a common problem on sweet cherries. Only required on susceptible varieties.
	Pears	Assail 70 WP	Pear psylla Codling moth	Prebloom (pg. 174) Petal Fall (pg. 175) First Cover (pg. 175) Summer Spray (pg. 176) Special Spray (pg. 175, 176)	120 g/ha 170 g/ha	See comments for sour cherries, above. Alternate with insecticides from different chemical families. See Table 4-1, <i>Insecticides Used on Fruit Crops, by Family</i> . Maximum 4 applications/yr. The preharvest interval is 7 days. Re-entry interval is 12 hrs.

Replace Table 4-1, page 42, with new table below.

TABLE 4-1. Insecticides Used On Fruit Crops, By Family

Chemical Family or Group	Product Name	Active ingredient
Bt Microbial	Bioprotec CAF	<i>Bacillus thuringiensis</i>
	Dipel 2XDF	<i>Bacillus thuringiensis</i>
	Foray 48BA	<i>Bacillus thuringiensis</i>
Carbamate	Carzol SP	formetanate hydrochloride
	Furadan 480F	carbofuran
	Lannate T-N-G	methomyl
	Pirimor 50DF	pirimicarb
	Sevin XLR plus	carbaryl
	Vydate	oxamyl
Chlorinated cyclodiene	Endosulfan 50W	endosulfan
	Thiodan 4EC	endosulfan
	Thiodan 50WP	endosulfan
	Thionex 50 WP	endosulfan
Chloronicotine	Admire	imidacloprid
	Assail 70 WP	acetamiprid
Ecdysone disrupter	Confirm 240F	tebufenozide
Naturalyte	Success 480 SC	spinosad
Organophosphate	APM 50W Instapak	azinphosmethyl
	Cygon 480	dimethoate
	Diazinon 50W	diazinon
	Diazinon 500E	diazinon
	DZN 600 EW	diazinon
	Guthion Solupak	azinphosmethyl
	Imidan 50WP	phosmet
	Lorsban 50W	chlorpyrifos
	Malathion 25W	malathion
	Parathion 15W	parathion
	Sniper	azinphosmethyl
	Zolone Flo	phosalone
Pyrethroid	Cymbush 250 EC	cypermethrin
	Decis 5EC	deltamethrin
	Matador 120EC	cyhalothrin lambda
	Pounce	permethrin
	Ripcord 400EC	cypermethrin
Triazapentadiene	Mitac W	amitraz

Replace Table 4-2, page 43, with new table below.

TABLE 2. Fungicides Used On Fruit Crops, By Family

Chemical Family/Group	Product Name	Active Ingredient
Acylamine	Ridomil/ Copper*	metalaxyl [†] + copper
	Ridomil Gold MZ*	metalaxyl [†] + mancozeb
	Ridomil Gold 480EC	metalaxyl
Anilinopyrimidine	Vangard 75 WG	cyprodinil
Benzimidazole	Benlate T-N-G	benomyl
	Gavel 75 DF*	mancozeb + zoxamide [†]
	Mertect SC	thiabendazole
	Senator 75 DF	thiophanate-methyl
Chloronitrile	Bravo 500	chlorothalonil
Chlorophenyl	Botran 75W	dicloran
Dicarboximide	Ronilan EG	vinclozolin
	Rovral	iprodione
Dithiocarbamate	Dikar*	mancozeb [†] + karathane
	Dithane DG	mancozeb
	Dithane M45	mancozeb
	Ferbam 76 WDG	ferbam
	Gavel 75 DF*	mancozeb [†] + zoxamide
	Manzate 200 DF	mancozeb
	Manzate 200 WP	mancozeb
	Penncozeb 75DF	mancozeb
	Polyram DF	metiram
	Ridomil Gold MZ*	metalaxyl + mancozeb [†]
	Zineb 80W	zineb
Guanidine	Equal 65WP	dodine
Hydroxyaniline	Elevate 50WDG	fenhexamid
Inorganic	Copper 53W	tri-basic copper sulphate
	Kumulus DF	sulphur
	Lime sulphur	lime sulphur
	Microscopic sulphur	sulphur
	Ridomil /Copper*	Metalaxyl+ copper [†]
Phosphonate	Aliette	fosetyl-al
Phthalimide	Captan 80 WDG	captan
	Folpan 50 WP	folpet
	Maestro 80DF	captan
Piperazine	Funginex 190 EC	triforine
Strobilurin	Sovran	kresoxim-methyl
	Cabrio EG	pyraclostrobin
Triazole (DMI)	Nova 40W	myclobutanil
	Nustar	flusilazole
	Topas 250E	propiconazole

* products with two or more active ingredients

[†] active ingredient which puts the product in the specified group

Replace Table 4-3, page 44, with new table below.

TABLE 3. Miticides Used On Fruit Crops, By Family

Chemical Family or Group	Product Name	Active ingredient
Avermectin	Agri-Mek 1.9 EC	abamectin
Carbamate	Carzol SP	formetanate hydrochloride
Diphenylethane	Kelthane 50W	dicofol
Pyridazinone	Pyramite	pyridaben
Tetrazine	Apollo SC	clofentezine

Replace Table 13-4, page 280, with new table below.

TABLE 13-4. Pest Control Product Companies

Code*	Registrant or agent	Web Site	Contact number
AEF	AEF Global Inc.	www.aefglobal.com	1-418-838-4441
AET	Bayer Crop Science	www.bayercropscience.ca	1-877-938-3737
ARV	Bayer Crop Science	www.bayercropscience.ca	1-877-938-3737
APB	Applied Biochemists Inc	ww.appliedbiochemists.com	1-800-558-5106
AVA	Arvesta	www.arvesta.com	1-519-766-1117
BAT	Bartlett, N.M. Inc		1-905-563-8261
BAZ	Basf Canada Inc	www.agsolutions.ca/	1-877-371-2273
BBB	Bayer Crop Science	www.bayercropscience.ca	1-877-938-3737
CAU	Cheminova	www.cheminova.com/	1-888-316-6260
DUQ	Dupont Canada Inc.	www.dupont.ca/ag	1-800-667-3925
DWE	Dow Agro Sciences Canada Inc.	www.Dowagro.com/canada	1-800-667-3852
EFA	Cerexagri Inc. (AtoFina Canada)		1-905-827-9841
ENG	Engage Agro Corp	www.engageagro.com	1-866-613-3336
GOW	Gowan Company	www.gowanco.com	1-520-783-8844
GRC	Great Lakes Chemical Corp	www.greatlakescorp.com	1-800-428-7947
GRN	Griffin Corp	www.griffinllc.com	1-912-242-8635
HOK	Hacco Inc.		1-608-221-6200
INT	Interprovincial Coop Ltd		1-204-233-3461
LPH	Lipha Tech		1-414-351-1476
MKC	Makhteshim		1-416-233-1496
MOX	Monsanto	www.monsanto.com	1-800-667-4944
NLC	Nalco Canada Inc.	www.nalco.com	1-905-623-8791
NRA	Norac Concepts	www.noracconcepts.com	1-613-841-2907
NUA	Nufarm	www.nufarm.ca	1-800-868-5444
NUG	Nu-gro Corp	www.nugro.com	1-800-461-7356
PBC	Pacific Biocontrol		1-360-571-2247
RHQ	Bayer Crop Science	www.bayercropscience.ca	1-877-938-3737
SYN	Syngenta Crop Protection	www.syngenta.ca	1-800-459-2422
UAG	United Agri Products	www.uap.ca	1-800-265-4624
UNR	Crompton Company		1-800-265-2157
VAN	Valent Biosciences		1-905-659-0886
VAR	Univar (formerly VanWaters & Rogers Ltd.)	www.vopakcanada.com	1-800-265-7671
WBR	Wilbur-Ellis Co. Canada	www.wilburellis.com	1-559-442-1220

* The 3-letter manufacturer's codes represent the codes listed in Publication 360, *Fruit Production Recommendations*, Table 13-1, Pesticides Used on Fruit Crops in Ontario, on pg. 266 and Table 12-3, Adjuvants Used in Ontario, on pg. 204.

Discard old editions of this supplement. Each year the appropriate working group of the Ontario Pest Management Research and Services Committee reviews the pesticides listed in this publication. To the best knowledge of the committee, at the time of printing, all of these pesticides were:

- federally registered
- reviewed by the Ontario Pesticides Advisory Committee (OPAC)
- classified by the Ministry of the Environment as of March 2003.

The information in this publication is general information only. By printing this publication, the Ministry of Agriculture and Food does not offer any warranty or guarantee, nor does it assume any liability for any crop loss, animal loss, health, safety or environmental hazard caused by the use of a pesticide mentioned in this publication.

The pesticide product label is a legal document. It is against the law to use the product in any other way. You must also use all pesticides in accordance with the Pesticides Act and Regulation 914, administered by the Ontario Ministry of Environment.

In this publication, most recommendations list several pesticides that can be used for each pest discussed. In general the least hazardous materials and those pesticides that pesticide applicators have used satisfactorily for years are listed first. More toxic pesticides and/or newer ones with less practical grower experience follow.

This publication lists a number of brand names of pesticides. This is for your convenience only. It is neither an endorsement of the product nor a suggestion that similar products are ineffective.

Consult each product label for specific information such as compatibility with other materials and the effect of environmental conditions. Weather and other factors influence the effectiveness of pesticides and the likelihood of crop injury.

Health Canada has established maximum residue limits (MRLs) for pesticides. Processors or retailers may demand more restrictive limits. Growers should seek advice of their intended market as to which restrictions or limitations apply. Keep accurate and up-to-date records on pesticide use in each crop.

Federal Registration of Pesticide Products

The Pest Management Regulatory Agency (PMRA) of Health Canada grants registration following an evaluation of scientific data to ensure that the product has merit and value; and the human health and environmental risks associated with its proposed use are acceptable.

1. Full Registration

Pesticide registrations are normally granted for a period of five years, subject to renewal.

2. Temporary Registration

Temporary registration may be granted for a period not to exceed one year, where the registrant agrees to produce additional scientific or technical information, or the pesticide is used for emergency control of a serious pest outbreak.

Supplemental Labels

You MUST obtain a supplemental label and follow all the label directions when PMRA approves new uses for a registered pesticide that do not appear on the current label.

Examples of when you must use a supplemental label include:

Temporary Registrations for Emergency Use

Minor Use Label Expansion (new label statements for crops that do not already appear on that product label)

You can obtain a copy of a supplemental label from the pesticide manufacturer or pesticide vendor, the grower association that sponsored the emergency registration or minor use, from OMAF or PMRA's Pest Management Information Service.

For more information on the federal registration status check the PMRA Web site at www.hc-sc.gc.ca/pmra-arla or call 1-800-267-6315.

Regulation of Pesticides in Ontario

Classification of Pesticides into "Schedules"

The Ministry of the Environment classifies all pesticide products into one of six **schedules**, based on the potential hazards that product may have for human health and the environment. For up-to-date information on the regulatory status of any pesticide check the Ontario Pesticides Advisory Committee Web site at www.opac.gov.on.ca or call (416) 314-9230/ fax (416) 314-9237.

Licensing and Certification Requirements for Pesticide Users

You must be a certified grower or licensed exterminator to buy and use Schedule 1, 2 and 5 pesticides.

Requirements for Growers and their Assistants

Growers must be certified through the **Grower Pesticide Safety Course** to buy and use Schedules 1, 2 or 5 pesticides on land they farm. There must be at least one certified grower for each farm operation.

All agricultural assistants must also receive formal pesticide safety training, recognized by the Ministry of the Environment, before they can use Schedule 2 or 5 pesticides under the supervision of a certified grower. This applies to all assistants — including family members, farm employees and seasonal workers.

For more information about training for growers and agricultural assistants check the Ontario Pesticide Education Program Web site at www.ridgetownc.uoguelph.ca/opec/ or call 1-800-652-8573.

Requirements for Commercial Applicators and their Assistants

If you plan to apply pesticides as a business, you must be a licensed exterminator. **This includes farmers who custom apply pesticides for other farmers and charge a fee for this service.** You must complete a home study course and certification exam, and send proof of certification to the Ministry of the Environment to obtain your license.

Unlicensed assistants must be Technicians before they may handle Schedule 2 (with restrictions), 3, 4 and 6 products under indirect supervision of a licensed exterminator. Technicians may not handle Schedule 1 and 5 products. For more information about exterminators and technicians check the Ontario Pesticide Training and Certification Web site at www.ridgetownc.uoguelph.ca/optc/ or call 1-888-620-9999.

Cette publication est aussi disponible en français.

